

## REMARKS/ARGUMENTS

The present response is intended to be fully responsive to the rejection raised in the Office action, and is believed to place the application in condition for allowance. Further, the Applicants do not acquiesce to any portion of the Office Action not particularly addressed. Favorable reconsideration and allowance of the application is respectfully requested.

In the Office action, the Office noted that claims 1-5 are pending and rejected. Applicants amend claim 1. Applicants have not introduced any new matter by way of the foregoing amendment.

Applicants, respectfully, traverse the rejection and submit that none of the claims now pending in the application are obvious under the provisions of 35 U.S.C. § 103. Thus, Applicants believe that all of these claims are in condition for allowance.

## REJECTION

### **Applicant's Response to the 35 U.S.C. § 103(a) Rejection of claims 1-5**

The Office rejected claims 1-5 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,446,495 issued to Tourtier et al. (hereon after *Tourtier*) in view of U.S. Patent Publication No. 2003/0185450 published to Garakani et al. (hereon after *Garakani*) further in view of U.S. Patent No. 5,321,771 issued to Burel et al. (hereon after *Burel*).

As the Examiner is aware, to establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claimed limitations. The teaching or suggestions to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F. 2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Furthermore, the courts have repeatedly stated that a prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away

from the claimed invention. *W.L. Gore & Associates, Inc. V. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983).

In the Office Action, the Office insinuated that the combination of *Tourtier*, *Garakani* and *Burel* discloses all the elements recited in claim 1. In support of the rejection, the Office indicated that “[i]t would have been obvious at the time the invention was made to one of ordinary skill in the art to modify *Tourtier*’s teaching of correlation to find a vector with *Garakani*’s teaching of finding a vector using autocorrelation [and] modify *Garakani*’s autocorrelation of fig. 3, num. 303 coupled fig. 3, num. 303 with that estimates a motion vector with *Burel*’s modified autocorrelation for various movements...” *Office Action*, at page 7-9. Applicants respectfully disagree.

Amended Claim 1 recites a combination of elements directed to a method of image filtering. The combination of elements includes “(a) computing a modified auto-correlation in a single direction for each pixel in an image; (b) filtering said image with a lowpass filter, wherein said filtering adaptively changes; and (c) interpolating said image and said filtered image from step (b) wherein said interpolating at said each pixel depends upon said modified auto-correlation in said single direction.”

*Tourtier* discloses in figure 3 an embodiment directed to “a grid of pixels showing the principle of interpolation for reconstructing a decimated pixel in a sub-band as a function of the motion vector accompanying this pixel in the image.” *Tourtier*, at Col. 2 lines 52-55. *Tourtier* further discloses “interpolation filters to interpolate the pixels in each sub-band by taking into account information contained in the adjacent sub-bands.” *Id.* at Col. 4 lines 9-11. Moreover, *Tourtier* discloses “filters (26, 27) for partitioning the spatio-temporal of each television image.”

Applicants agree with the Office that *Tourtier* “does not teach the claimed ‘modified auto-correlation’...” *Office Action*, at page 7. In addition, *Tourtier* specifically discloses a filter that interpolates according to motion vector and filters for partitioning spatio-temporal of each television image. Whereas claim 1 specifically recites “computing a modified auto-correlation in a single direction for each pixel in an image [and] interpolating said image and said filtered image from step (b) wherein said interpolating at s

Therefore, unlike amended claim 1, *Tourtier* is devoid from disclosing the combination of elements of claim 1, directed to “computing a modified auto-correlation

in a single direction for each pixel in an image; filtering said image with a lowpass filter, wherein said filtering adaptively changes according to the modified auto-correlation [and] interpolating said image and said filtered image from step (b) wherein said interpolating at said each pixel depends upon said modified auto-correlation in said single direction." [Emphasis added].

*Garakani*, on the other hand, discloses "methods and apparatus for measuring self-similarity in spatiotemporal signals to characterize, adaptively control acquisition and/or storage, and assign meta-data for further detail processing." *Garakani*, at Abstract. Hence, *Garakani* does not teach or suggest "computing a modified auto-correlation in a single direction for each pixel in an image," as recited in amended claim 1. Hence, *Garakani* also devoid from teaching or suggesting the combination of elements of amended claim 1, which are directed to "computing a modified auto-correlation in a single direction for each pixel in an image [and] interpolating said image and said filtered image from step (b) wherein said interpolating at said each pixel depends upon said modified auto-correlation in said single direction." [Emphasis added]. Moreover, *Garakani* does not show any motivation or a reasonable expectation of success to combine *Garakani*'s teaching with *Tourtier*'s discloses teaching. Hence, the *Tourtier* and *Garakani*, alone and in combination, do not teach or suggest Applicants' inventive concept of claim 1.

The Office indicated that *Garakani* "teaches that autocorrelation is 'well known' in [0132], line 9...." *Office Action*, at page 8. The Applicants point out that *Garakani* discloses that in some embodiments the invention "employs a self-similarity matrix, frames and frame sequences to approximate a temporal autocorrelation of the acquired signal." *Garakan*, at ¶ [0132]. However, *Garakani* is devoid from disclosing utilizing the auto correlation interpolating at said each pixel depending "upon said modified auto-correlation in said single direction," as recited in claim 1.

*Burel* discloses "comprises a data processor associated with a network of automata organized in three levels; the inputs of each of the automata are weighted by adjustable coefficients; the number of automata of the first level is equal to the number of characteristic values computed from observation windows taken firstly in a set of examples of image zones having different textures." *Burel*, at Abstract. [Emphasis added]. *Burel* also discloses "modified autocorrelation functions which were computed for this example of a given texture are applied to the inputs of the network...." *Id.* at Col. 4 lines 29-44.

Applicants submit that *Burel* is devoid from teaching or suggesting the combination of elements of claim 1, directed to “interpolating said image and said filtered image from step (b) wherein said interpolating at said each pixel depends upon said modified auto-correlation in said single direction.” [Emphasis added]. Moreover, *Burel* does not show a motivation or an expectation of success to combine *Burel*’s teaching with *Tourier*’s or *Garakan*’s teachings.

Accordingly, it is Applicant’s opinion that neither *Tourier*, *Garakani* nor *Burel* suggest or show a motivation for modifying the reference or to combine the reference teachings. In addition, it is Applicants’ opinion that there is no evidence in either prior art that shows a “reasonable expectation of success” in combining the references. Thus, it is Applicant’s belief that a prima facie case of obviousness has not been provided.

As a result, Applicants submit that, at the time Applicant’s invention was made, it would not have been obvious to one of ordinary skill in the art “to modify *Tourtier*’s teaching of correlation to find a vector with *Garakani*’s teaching of finding a vector using autocorrelation [and] modify *Garakani*’s autocorrelation with *Burel*’s modified autocorrelation” to teach Applicants’ inventive concept recited in claim 1. Therefore, Applicants submit that *Tourtier*, *Garakani* and *Burel*, alone and in combination, do not teach or suggest all the elements recited in claim 1.

Claims 2-5, depend, directly or indirectly, from independent claim 1 and necessarily include all the limitations of claim 1. Since Applicants submit that *Tourtier*, *Garakani* and *Burel*, alone and in combination, do not teach all the elements of claim 1, Applicants also submit that *Tourtier*, *Garakani* and *Burel*, alone and in combination, do not teach all the elements of claims 2-5. Thus, Applicants submit that claims 1-5 meet the requirements of 35 U.S.C. § 103(a) and are in condition for allowance. Applicants respectfully request reconsideration and withdrawal of the rejection to claims 1-5.

### **CONCLUSION**

In view of the foregoing, the Applicants submit that none of the claims presently in the application are obvious under the provisions of 35 U.S.C. § 103(a). Consequently, the Applicants believe that all these claims are presently in condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

If, however, the Office believes that any unresolved issues still exist or if, in the opinion of the Office, a telephone conference would expedite passing the present application to issue, the Office is invited to call the undersigned attorney directly at 972-917-4365 or the office of the undersigned attorney at 972-917-0995 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted,

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